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***Is this Cell a Human Being?* by Antoine Suarez and Joachim Huarte (editors). New York, Springer, x+209 pp. HB \$139.**

Reductio ad absurdum arguments remain popular with philosophers, and for good reason. If a viewpoint can be characterised by a set of premises, and it can be shown that this set of premises together imply some false, self-contradictory, or otherwise absurd conclusion, then these premises cannot all be true at the same time, and thus the viewpoint is untenable. Nevertheless, there is a problem with applying this form of argument to views with which one disagrees, in that it is difficult to characterise a view fairly and accurately if one thinks it false. The logic of *reductio* arguments typically depends on the aptness of some analogy or other. However, assessing the aptness of an analogy will depend on subtle underlying interpretative principles and these will not be available unless one has a minimally sympathetic understanding of the view one is criticising. The danger with not adopting something like Donald Davidson's "principle of charity" is that the argument will miss its target and will succeed only in knocking down a straw man. This seems to be a likely outcome of arguments of the form: "If you think X (which I don't) then you must think Y (which is absurd)".

At one level, the volume edited by Antoine Suarez and Joachim Huarte could be seen as a response to a *reductio ad absurdum* argument which purports to demonstrate that one cannot reasonably attribute full moral status to the early human embryo. Peter Singer and others have argued that cell reprogramming (whether by cell nuclear replacement or by induction using vectors) implies that, if a pre-implantation human embryo is a human being, then every cell in the human body is a human being! An obvious counter to these arguments is to protest that the analogy is not apt, that somatic cells are simply not similar enough to embryonic stem cells, which in turn are not similar enough to embryos, for the logic to proceed. However, to demonstrate convincingly that these analogies are not apt it is necessary to provide a more complete narrative, which grounds an alternative set of analogies which *are* apt. This is precisely what Suarez and Huarte aim to do.

Rather than simply rebutting the *reductio*, this volume takes up the challenge and seeks to explore, carefully and in detail, the implications of technologies such as cell reprogramming. All the authors in this collection accept the premise that, in the paradigm case, it is reasonable to trace the existence of a human being back to the generation of a human embryo through fertilisation of egg with sperm. Human life (typically) begins at fertilisation. Given this premise, these authors then ask, what should be said about cells which while embryo-like also seem unlike embryos in some respects? The volume is called *Is this Cell a Human Being?* It might have been called *When is an embryo not an embryo?* How can one decide whether novel cells (such as embryonic stem cells or induced pluripotent stem cells) and cell-entities (such as parthenotes, hydatidiform moles, the products of altered nuclear transfer, and interspecies mixtures) are, or are not, relevantly similar to human embryos such as to merit the same ontological and moral status?

The papers are the fruit of a meeting held in Barcelona in 2009, hosted by the Social Trends Institute. Of the seven papers presented at that meeting, six are reproduced in this volume (the seventh, by Helen Watt has already been published in the proceedings of the Third International Colloquium of the International Association of Catholic Bioethicists). Suarez and Huarte have expanded the volume by adding a scientific chapter (by Greber and Schöler), papers by Patrick Lee and Pablo Requena Meana, and two further papers of their own (as introduction and conclusion to the volume). Meana was a discussant at the meeting in Barcelona and his paper is very helpful from a Catholic

perspective in relating the discussion to the Vatican Instruction *Dignitas Personae* (which was issued after the Barcelona meeting).

As someone who was present myself at that meeting, I am delighted to see the papers now shared with a wider audience. One of the striking features of that meeting, still apparent in this volume, is how scientists and philosophers who agree about when it is that human life begins in the ordinary case, nevertheless may disagree quite radically about how to identify human embryos from among the products of novel biotechnologies. I take this to be not a weakness but a strength of the collection, and something that demonstrates the credibility of this response to cell reprogramming from scholars who accord the human embryo full moral status. Rather than receiving a simple rhetorical answer, Singer's *reductio* has generated a complex discourse.

Suarez and Huarte have edited the volume and have allowed themselves three papers in which to put their own view, so it seems reasonable to use their account as the basis for this review. They have together developed a criterion which they think succeeds in distinguishing embryos from non-embryos. In brief, an embryo is a living organism that has "the *proper* biological potential for developing the neural activity responsible for controlling spontaneous motility" (p. 4 and chapters 5 and 11). In focusing on spontaneous motility they exclude "the *autonomous* activity of the heart" (p. 60) or other organs, and they defend this exclusion by drawing an analogy between certain embryo-like entities with a heartbeat and brain-dead human adults. They further make the claim that it is possible to test empirically whether an entity is an embryo by testing whether it has a defect that Directly Inhibits the Appearance of Neural Activity (DIANA). As an example they claim that the inner cell mass (ICM) of an embryo created by fertilisation is a human being even when stripped of its trophoctoderm (TE), whereas the ICM of standard parthenotes, which can develop "at best, up to the stage of heart beating and yolk sac circulation, but are not capable of going beyond that stage" (p. 185), are not human beings.

Suarez and Huarte have performed a service to readers by proposing model criteria to distinguish between embryos and non-embryos and by showing how these can be applied to different cases. However, the criteria they propose are problematic on a number of levels.

In the first place, the criterion of "potential for... spontaneous motility" sits uneasily between the "radical capacity for conceptual choice and deliberate choice" (p. 84) defended by Patrick Lee and the "coordinated production of functionally integrated structures" (p. 29) defended by Maureen Condic (and also Nicanor Austriaco p. 48 and William Hurlbut, p. 166). Within the Catholic tradition the activity that has been regarded as most *characteristically* human is intellectual, hence human beings are called "rational animals". On the other hand the first and most basic activity of a living organism, which shows the presence of *psyche*, in the Aristotelian sense, is vegetative. The demonstration of spontaneous motility is neither the end point of development (rational activity of a mature adult) nor is it the first act of an organism (integrative biological activity). It therefore seems arbitrary to choose potential for *this* level of functioning as the key criterion for human life.

In the second place, it must be asked whether, even on their own criterion, the existence of a heartbeat should be regarded as *vegetative*. There are no plants with heartbeat and this kind of regular self-motion is characteristic of animals. I am persuaded that "cell division and even some evidence of progressive differentiation do not alone indicate the presence of an organism" (p. 166) and also that simple blastocyst-like structures may be generated by processes other than true

embryogenesis. A dividing cluster of human cells is not necessarily an embryo. However, if an entity progresses so far as to reach the stage of heartbeat then it clearly shows some overarching integration of parts. The arguments against recognising such an entity as an embryo of some kind (albeit one that will perish early in development) succeed only in begging the question.

Finally, it should be noted that Suarez and Huarte are somewhat eccentric in their usage of the terms *totipotent* and *pluripotent*. Rather than define totipotent as meaning capable of developing all cell types including the TE, (p. 202) Suarez and Huarte define totipotent to mean “sharing the *proper biological potential* to develop into a human fetus” (p. 186) even if this is the case only when combined with TE. This usage is not only idiosyncratic but implies that the TE can be characterised merely as an organ, like the heart, which might be replaced. Suarez and Huarte show no recognition that the ICM requires the TE to *generate pattern and order*, without which it remains a disorganised clump of cells. As Maureen Condic said at the meeting in Barcelona (according to my own, imperfect, memory of the event), “if I were forced to say where the seat of the soul was located in the blastocyst, I would say, ‘in the trophectoderm!’”

The most valuable contribution of the editors of this volume is thus more as editors than as writers. Nevertheless, the book as a whole is a thoughtful and important resource for reflection in this area. There have been journal articles in various places but I know of no other substantial volume where people who share a common starting point on the status of the embryo have sought to resolve as far as possible the obscure status of novel cellular artefacts created by human biotechnology.

In some cases the resolution is very clear: several authors provide good arguments against regarding induced pluripotent stem cells as human embryos. In some cases the authors succeed only in charting the ambiguities. Neville Cobbe represents this visually in a graph of shades of grey framed by Cartesian X- and Y-axes (p. 146), to illustrate the ethical evaluation of interspecies research. The subject of interspecies mixtures is explored in more depth in another publication, *Chimeras Children* (Continuum, 2012), which Calum Mackellar, another Barcelona discussant, and I recently co-edited. However, we also have had to acknowledge perplexity in the face of some possible creatures. For in some cases the obscurity results not from the limited intellectual capacity of the beholder but from the nature of the object itself, as was recognised already by Aristotle,

“Nature proceeds little by little from things lifeless to animal life in such a way that it is impossible to determine the exact line of demarcation, nor on which side thereof an intermediate form should lie....So, in the sea, there are certain objects concerning which one would be at a loss to determine whether they be animal or vegetable” (*History of animals* 8.1)

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